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EXAMINER	
JACKSON, BLANE J	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/822,478	LEE, JUNG A.	
	Examiner	Art Unit	
	Blane J. Jackson	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13,15-17,21-25 and 27-31* is/are rejected.

7)☒ Claim(s) *12,14,18-20,26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-31 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 7,321,642. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claim elements of the application, concerned with temporal and

spatial processing to determine base station beam steering, is a broad version or a subset of the claim elements of the earlier filed patent.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 31 recites the limitation "the plurality of antennae". There is insufficient antecedent basis for this limitation in the claim. It is suggested the phrase is amended to "a plurality of antennae".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-11, 13, 15-17, 21-25 and 27-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Gray (US 6,108,323).

As to claims 1, 22 and 28, Gray teaches a method of multipath searching using a signal transmitted by a source and received by a plurality of antennae (figures 2 and 3, column 5, lines 39 to column 6, line 43), comprising:

subjecting at least one control bit in at least one received signal to temporal processing (figure 4, column 6, line 44 to column 7, line 67, the control means (438)

may first direct the measuring means (436) of the searcher unit (404) to measure the delay profile (tau) of the received signal),

subjecting the at least one control bit in the received signal to spatial processing (column 7, lines 57-67, the control means (438) may then direct the phasing means (434) to sweep the different direction angles with a narrow directions beam and with the measuring means (436) determines the incoming directions (alpha) of the components of the signal that have arrived with different delays), and

determining a time delay and a direction associated with the source based upon the temporal processing and the spatial processing (figures 1-4, column 6, line 44 to column 7, line 11, the searcher unit (404) comprising phasing means (434) and measuring means (436) under control of control means (438) to determine the angle and delay profile of the input signal from the antenna array).

As to claim 2 with respect to claim 1, Gray teaches subjecting each of the control bits to temporal processing comprises subjecting each of the control bits to temporal processing substantially before subjecting each of the control bits to spatial processing (figure 4, column 7, lines 1-56, the searcher unit (404) may measure the different delays on a signal before measuring the incoming directions for the signal).

As to claim 3 with respect to claim 1, Gray teaches subjecting each of the control bits to spatial processing 15 comprises subjecting each of the control bits to spatial processing substantially before subjecting each of the control bits to temporal processing (figure 4, column 7, lines 20-39).

As to claim 4 with respect to claim 1, Gray teaches subjecting the at least one control bit in the received signal to temporal processing comprises subjecting at least one of a pilot control bit, a feedback information bit, a transport format combination indicator bit, and a transmit power control bit in at least one received uplink dedicated physical control channel to temporal processing (column 7, lines 1-11, the searcher unit (404) utilizes the appropriate recurring data supplied by the radio frequency parts of the antenna group from the uplink to determine the incoming directions and delays of the received signal).

As to claim 5 with respect to claim 1, Gray teaches subjecting the at least one control bit in the received signal to spatial processing comprises subjecting at least one of a pilot control bit, a feedback information bit, a transport format combination indicator bit, and a transmit power control bit in at least one uplink dedicated physical control channel to spatial processing (column 7, lines 1-11, the searcher unit (404) utilizes the appropriate recurring data supplied by the radio frequency parts of the antenna group from the uplink to determine the delay profile and angles of the components of the input signal).

As to claim 6 with respect to claim 1, Gray teaches determining the time delay and the direction associated with the source comprises determining whether a received signal includes only noise or the received signal includes noise and the received uplink signal (column 7, lines 19-39, the parameters of the measured signal components

having a strength exceeding the given threshold value, the angle of arrival, delay and signal quality such as the received power, are provided to the channel controller (412)).

As to claim 7 with respect to claim 6, Gray teaches determining the time delay and the direction associated with the received signal comprises forming at least one decision statistic based upon the temporal processing and the spatial processing and comparing the at least one decision statistic with at least one corresponding threshold (column 7, lines 19-39, the obtained measurement result, the signal delays and signal quality such as signal power, are compared with a given threshold value where the parameters of the measured signal components having a strength exceeding the given threshold value are provided to the channel controller (412)).

As to claim 8 with respect to claim 7, Gray teaches forming the at least one decision statistic comprises forming a plurality of partial correlations by coherently accumulating at least one control bit block corresponding to the at least one control bit in the received signal (column 7, lines 47-56, the digitized signal received by the antenna group can be phased in the phasing means (434) step by step such that the direction angle of the greatest gain is changed through angle intervals).

As to claim 9 with respect to claim 8, Gray teaches forming the at least one decision statistic comprises non- coherently summing the plurality of partial correlations (column 7, lines 47-56, the digitized signal received by the antenna group can be

phased in the phasing means (434) step by step such that the direction angle of the greatest gain is changed through angle intervals).

As to claim 10 with respect to claim 1, Gray teaches subjecting the at least one control bit in the received signal to spatial processing comprises applying an angular weight vector to the received signal (column 8, lines 1-23, on the basis of the information on the angle of arrival alpha that is received from the searcher unit (404) via the channel controller (412), the monitoring means of the receiver unit (400) sets the complex weighting coefficients).

As to claim 11 with respect to claim 10, Gray teaches applying the angular weight vector to the received signal comprises applying the angular weight vector to the received signal at a chip or a sub-chip rate (column 8, lines 8-33, a CDMA system with receiver units comprising a rake receiver operating in a modified manner).

As to claim 13 with respect to claim 1, Gray teaches subjecting the at least one control bit in the received signal to temporal processing comprises temporally correlating at least one control bit block associated with the at least one control bit in the received signal (column 7, lines 23-36, the input signal to the measuring means (436) of the searcher unit (404) is subjected to dispreading over the coherence time of the channel).

As to claim 15 with respect to claim 1, Gray teaches determining the direction associated with the source comprises determining an angle-of-arrival associated with the source (figure 4, column 6, lines 44-67).

As to claim 16, Gray teaches a method comprising:

Forming a first signal by spatially processing at least one control bit in at least one received signal based upon at least one angle (column 6, line 44 to column 7, line 22, a searcher unit (404) comprises phasing means (434) as controlled by the control means (438) to determine all the essential incoming directions for the input signal),

Forming a second signal by temporally processing the first signal (column 7, lines 23-56, the searcher unit (404) comprises measuring means (436) as controlled by the control means (438) to perform measurement with different delays on a signal output from the phasing means (434) to determine the delay profile for the incoming directions of the input signal), and

Determining a time delay and direction associated with the source based upon the second signal (figure 4, column 7, lines 36-39, column 8, lines 1-6, the parameters of the measured signal components having a strength exceeding the given threshold value for the angle of arrival, delay and signal quality such as signal power are provided to the channel controller (412)).

As to claim 17 with respect to claim 16, Gray teaches forming the first signal by spatially processing the at least one control bit in the received signal based upon the at least one angle comprises applying at least one angular weight vector associated with

the at least one angle to the received signal (column 7, lines 1-19, phasing means (434) of searcher unit (404) can be implemented with equipment performing the multiplication of an input signal with complex coefficients).

As to claim 21 with respect to claim 16, Gray teaches determining the time delay and the direction associated with the source based upon the second signal comprises: forming at least one decision statistic using the second signal and comparing the at least one decision statistic with at least one corresponding threshold (column 7, lines 23-39, the obtained measurement result is compared with a given threshold value).

As to claim 23 with respect to claim 22, Gray teaches forming the first signal by temporally correlating at least one control bit in the received uplink signal comprises forming the first signal by temporally correlating at least one control bit in the received signal using at least one channel code (figure 4, column 7, lines 20-36).

As to claim 24 with respect to claim 22, Gray teaches forming the second signal by spatially processing the 15 first signal based upon the at least one angle comprises forming at least one angle-weighted signal by applying at least one angular weight vector associated with the at least one angle to the at least one first signal (column 7, lines 1-19, phasing means (434) of searcher unit (404) can be implemented with equipment performing the multiplication of an input signal with complex coefficients).

As to claim 25 with respect to claim 24, Gray teaches forming the second signal comprises summing the 20 angle-weighted signals (figure 3, column 6, lines 14-43, transceiver (200) utilizes an adaptive antenna group where each antenna element is connected to radio frequency parts, multiplier and adder (318)).

As to claim 27 with respect to claim 22, Gray teaches determining the time delay and the direction associated with the source based upon the second signal comprises forming a third signal by a post-detection integration using the second signal forming at least one decision statistic using the third signal and comparing the at least one decision statistic with at least one corresponding threshold (column 7, lines 19-39, the obtained measurement result or third signal, the signal delays and signal quality such as signal power, are compared with a given threshold value where the parameters of the measured signal components having a strength exceeding the given threshold value are provided to the channel controller (412)).

As to claim 29 with respect to claim 28, Gray teaches providing the first signal having the at least one control bit comprises providing the first signal having at least one a pilot control bit, a feedback information bit, a transport format combination indicator bit, and a transmit power control bit at least one received uplink dedicated physical control channel processing (column 6, line 55 to column 7, line 11, the searcher unit (404) utilizes the appropriate recurring data supplied by the radio frequency parts of the antenna group from the uplink to determine the incoming directions and delays of the received signal).

As to claim 30 with respect to claim 28, Gray teaches providing the first signal comprised providing the first signal having an associated time-delay and an associated direction (column 7, lines 1-11, the received signal).

As to claim 31 with respect to claim 30, Gray teaches providing the first signal having the associated time direction comprises providing the first signal having a plurality of angles-of-arrival **at a plurality** of antennae (figure 3, column 6, lines 14-29, an adaptive antenna consisting of several different elements where the signal pattern is shaped as a result of processing the angle and delay of any multipath of a received signal).

Allowable Subject Matter

Claims 12, 14, 18-20, 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Thursday, 8:30 AM-7:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Blane J Jackson/
Primary Examiner, Art Unit 2618